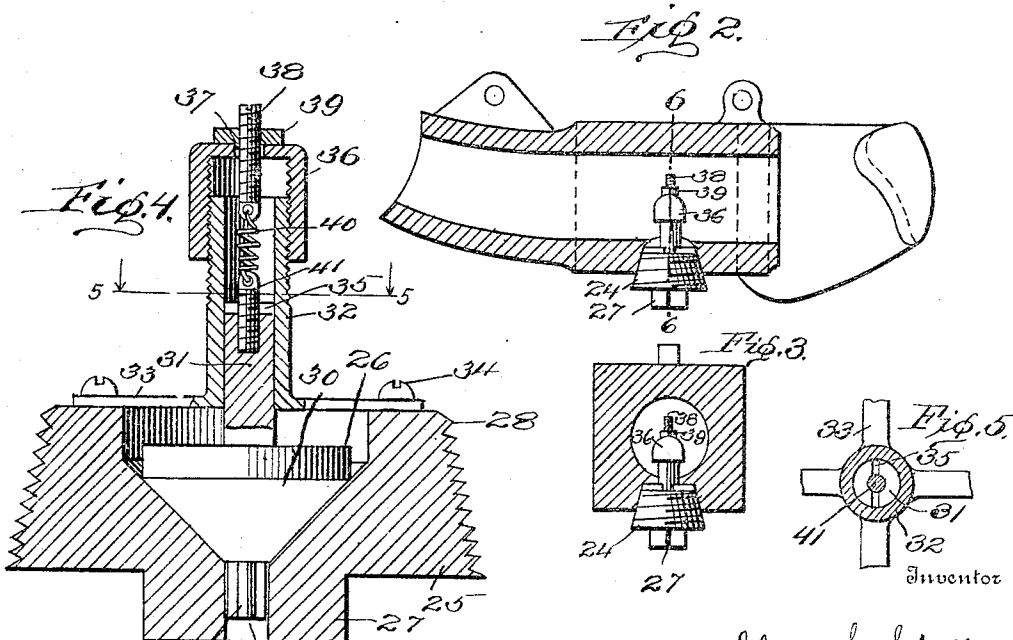
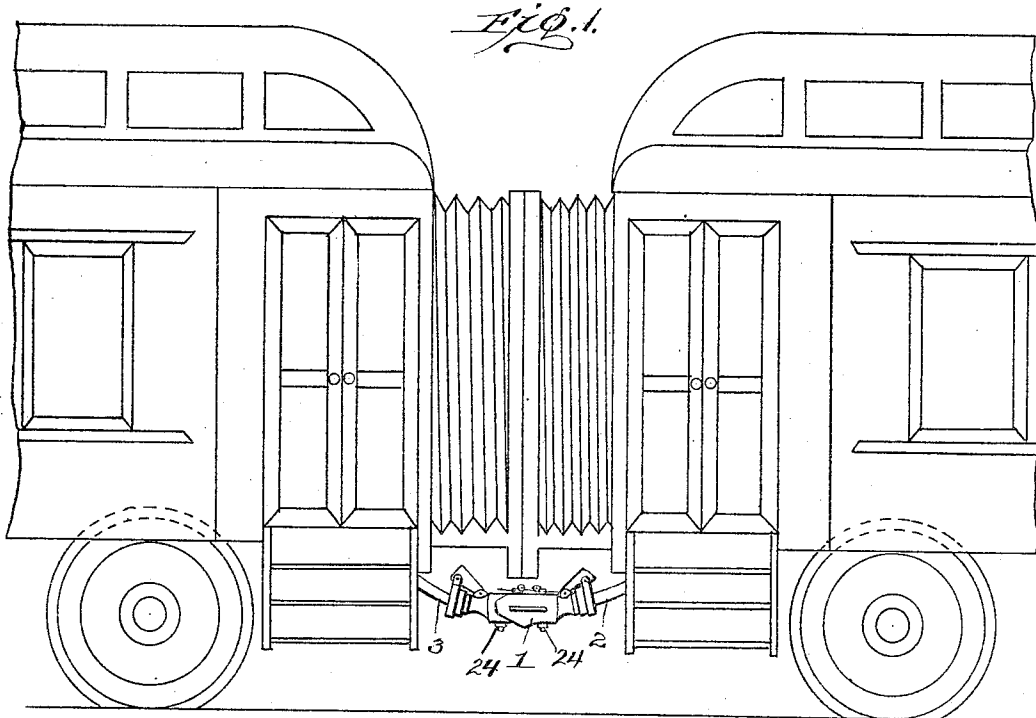


E. S. STOTTS.
DRAIN VALVE.

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943,577.

Patented Dec. 14, 1909.



Witnesses
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ELZA S. STOTTS, OF MARION, IOWA.

DRAIN-VALVE.

943,577.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ELZA S. STOTTS, a citizen of the United States, residing at Marion, in the county of Linn and State of Iowa, have invented certain new and useful Improvements in Drain-Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in automatic drain valves.

The invention comprises the provision of a coupling adapted to have the parts made exactly alike and formed with locking means that will first draw the couplers firmly together, and then lock the same in that position.

The invention further comprises the provision of a hose coupler formed with locking means that are designed to be drawn together and then locked by the movement of cam shaped levers acting against receiving faces therefor, the cam of one part of the coupler engaging the receiving faces upon the other part of the coupler.

The invention comprises a drain valve for draining the water and condensed steam from the steam pipes and for permitting the escape of low pressure steam, the same comprising a member formed with a valve seat and a valve, and means for normally preventing said valve from engaging said seat when a pressure of considerable amount is in the hose, but designed to remove the valve from its seat when the pressure has fallen below a predetermined degree, whereby the low pressure steam and liquid matter may be drained from said hose.

The invention still further comprises the provision of a valve arranged with a valve member normally positioned upon its seat when there is pressure exerted thereon, but connected with a spring and adjusting means for removing the valve off the seat when the pressure has fallen below a predetermined degree, the regulating means being used to regulate the amount of pressure necessary to hold the valve to its seat.

The object in view is the provision of a drain valve positioned in the coupler for draining the same, and the hose to which the coupler is applied for preventing any liquid remaining in the hose after the pres-

sure has been reduced below a predetermined amount.

With these and other objects in view the invention comprises certain novel constructions, combinations, and arrangement of parts as will be hereinafter more fully described and claimed.

In the accompanying drawings: Figure 1 is a view of the ends of two abutting cars showing my improved coupler. Fig. 2 is a horizontal section through a coupler showing my improved drain valve in connection therewith. Fig. 3 is a section through Fig. 2 on line 6—6. Fig. 4 is an enlarged view in vertical section of my improved drain valve. Fig. 5 is a fragmentary sectional view through Fig. 4 approximately on line 5—5.

Referring to the drawing by numerals, 24 indicates a valve as a whole which may be applied to a coupler, formed with parts 4 and 5, which parts are constructed with an aperture or are provided with one by boring the same for forming holes therein into which is secured the valve 24. Parts 4 and 5 are connected to the steam pipes 2 and 3 respectively so as to permit valve 24 to drain the same when pressure therein has dropped below a certain point.

Valve 24 is arranged with a base member 25 having a seat 26 formed therein and a squared portion 27 extending from the base for forming means by which the entire valve 24 may be inserted and again removed from the coupling. The periphery of the base 25 is arranged conical and is threaded at 25 so that the same may be screwed tightly into a threaded aperture formed in coupling 1.

Extending from the opening caused by seat 26 is an aperture 29 that passes to the atmosphere so that whenever valve member 30 is moved off its seat 26 water, steam or other like matter may pass from hose or tubes 2 and 3 out to the atmosphere. Valve member 30 is formed with a stem 31 that projects upwardly and is designed to slide in a sleeve 32 which has formed on the lower end thereof a spider 33. The spider 33 is secured to the base 25 by any suitable means, as screws 34, so that sleeve 32 will be positioned centrally and over seat 26. The upper end of stem 31 is slotted at 35 for receiving a tool, as for instance, a bifurcated screw-driver, which when rotated will rotate valve member 30, and when valve mem-

ber 30 is rotated and at the same time pressed against its seat 26, it will be ground to a limited extent so as to form a tight joint. This provision of means for grinding valve member 30, together with its seat 26 is of considerable advantage as the continuous operation of the valve and passage of water therethrough together with various matters as particles of corroded pipe will cause a coating more or less uneven to be formed upon the valve member as well as upon the seat and by this grinding action such foreign matter may be removed and the valve and seat kept in substantially their original condition. Sleeve 32 is threaded at its upper end for receiving an internally threaded cap 36. The cap 36 is formed or provided with an aperture 37 through which passes an extension, bolt or member 38. A nut 39 is provided that normally rests against the top of cap 36 and holds member 38 in position. Secured to the lower end of bolt or member 38 is a spring 40 which in turn is secured to a retaining bolt or member 41 screw-threaded into stem 31. By this construction and arrangement which is clearly seen in Fig. 4 when it is desired to regulate the tension of power which is required to hold member 30 upon its seat 26 the bolt 39 is rotated, a screw-driver or other holding tool being placed in engagement with a slot in member 38 for preventing rotation thereof, and nut 39 is then rotated for bringing spring 40 under a greater tension or lessening the tension thereof. If desired cap 36 may be rotated which will have the same effect, that is to increase or decrease the tension of spring 40.

In use the valve 24 may be placed upon a coupler as 1 or in any other place as desired, though preferably the same is placed upon the coupler as the coupler is placed at the lowest point and any condensation of the water in the steam pipes will gravitate to that position. When the steam pipes 2 and 3 are in use and there is pressure thereon the pressure will hold valve member 30 against its seat 26 and consequently no steam will escape through aperture 29. When the cars have been switched to a side track or left standing without a steam pressure the steam pressure will gradually decrease, or escape if the pipes are open at some point, but in either case water will be formed by the condensing of the steam, which water will remain in the pipes unless some one goes along and uncouples the pipes at the end of each car. If the water is left in the pipes in cold weather, and especially in northern climates, the same will freeze and often do considerable damage and do the car much injury because of leaking steam pipes. When the cars have been left with condensed steam in the pipes in the form of water, or water has entered the pipes from

any other source, valve member 30 will move from its seat 26 as soon as the pressure has decreased and passed a certain predetermined point. When the pressure has passed this predetermined point valve 30 will be raised by spring 40 and the water and remaining steam will be permitted to escape at the end of each car and thoroughly drain all of the pipes. This will positively prevent any freezing of the pipes as no moisture is left therein, any steam having been left therein will of course escape with the water as soon as valve member 30 rises. The valve member 30 may be regulated to rise or move off its seat at any pressure, from almost no pressure to a considerable pressure. A guiding member or tension 42 is provided for member 30 that is designed to reciprocate or move in aperture 29 so as to positively center and hold for ready engagement the valve member.

What I claim is:

1. In a device of the character described, a drain valve comprising a base formed with a seat, a valve member engaging said seat, a guide for said valve member for causing a proper engagement thereof with said seat, a spring for normally holding said valve member off its seat, a plurality of means for varying the tension of said spring, said means being a plurality of threaded bolts arranged to be varied in position by the rotation thereof, and an adjustable cap carrying one of said bolts.

2. In a device of the character described, a base removably secured in position and formed with a seat, a valve member engaging said seat, a stem for said valve member formed with a slot, and a sleeve provided with radiating arms for holding the same in position for guiding said stem, said valve member being designed to be ground against said valve by the rotation of said valve member upon the insertion and rotation of a tool in said slot.

3. In a device of the character described, a drain valve comprising a base formed with means for removably securing the same in position, a valve member proper in said base to engage its seat when pressure is applied thereto said valve member being formed with a stem, a sleeve arranged to receive one end of the stem projecting from said valve member proper and for guiding the same, an adjustable bolt connected with the valve stem fitting in said sleeve, a spring connected with said bolt, a second bolt connected with said spring, a nut engaging said second mentioned bolt for holding the same in position, and varying the position of the same and the tension of said spring, and a cap threaded onto said sleeve for supporting said second mentioned bolt whereby the position of said bolt may be varied for varying the tension of said spring, said cap and said nut

forming independent means for adjusting the position of said second mentioned bolt and the tension of said spring.

4. In a drain valve, the combination of a
5 base adapted to be inserted from without in the wall of the chamber to be drained having a valve seat facing toward the interior of said chamber, a valve adapted to seat on said seat having an inwardly projecting stem, a mem-
10 ber secured to said base having a bore adapted to form a guide for said stem, a spring

acting upon said stem and said member to lift the valve from its seat, and an element adjustable with reference to said member through which said spring acts thereon.

In testimony whereof I affix my signature in presence of two witnesses.

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ELZA S. STOTTS.

Witnesses:

P. S. GRIFFIN, -
RAY ROBERTS.